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10/035,248	01/04/2002	Norihiko Nadanami	Q67857	2933

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EXAMINER
TUNG, TA HSUNG

ART UNIT	PAPER NUMBER
1753	8

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/035,248	Applicant(s) NADANAMI ET AL
	Examiner T. TUNG	Group Art Unit 1753
		Paper No. 8

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☑ Claim(s) 1-21 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☑ Claim(s) 1-13, 21 is/are allowed.

☐ Claim(s) 14-20 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

☑ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

☑ All ☐ Some* ☐ None of the:

☑ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

☑ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☑ Notice of Reference(s) Cited, PTO-892

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Interview Summary, PTO-413

☐ Notice of Informal Patent Application, PTO-152

☐ Other _____

Office Action Summary

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claim 17 is rejected under 35 U.S.C. 102(e) as being anticipated by Taniguchi etal 6,238,535.

Taniguchi discloses two proton conducting solid electrolytes 50 and 3. A voltage source Ep is connected across two electrodes sandwiching electrolyte 50, while a voltage source Es and a current measuring means Is are connected across two electrodes sandwiching electrolyte 3. See figures 10 and 11; col. 12, line 56 to col. 14, line 5.

Electrolyte 50, with a voltage source, clearly can serve as a "means for adjusting the hydrogen concentration of a gas to be measured". Electrolyte 3, with a voltage source and a current measuring means, clearly can serve as a "means for decomposing or dissociating the hydrogen gas produced by reaction of CO with the hydrogen-containing substance to thereby generate protons", as a "means for transporting the protons thus generated through a proton-conductive layer", and as a "means for obtaining the CO concentration of the gas under

measurement by measuring a limiting proton current flowing through the proton-conductive layer".

In regard to the "means for reacting CO contained in the adjusted gas with a hydrogen-containing substance....", that is met by chamber 40, which can serve as a space for reacting two substances.

The rejection can also be construed in this manner. Electrolyte 3 alone of Taniguchi meets both of the "means" recited at lines 3 and 7 of applicant's claim 17, because the language does not exclude these means to be the same means that carry out different functions at different times. As for the "means" recited at lines 10 and 12 of claim 17, these means are inherently true of the act of pumping hydrogen at the second electrolyte 6 (figure 1) and measuring the pumping current.

It should be pointed out that since claim 17 is drawn to an apparatus whether Taniguchi actually carries out the functions recited by applicant's claim is irrelevant, so long as the patent's structure is capable of being manipulated to carry out the claimed function.

Claims 14-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 14, line 2; claim 15, line 2; claim 17, line 7; claim 20, line 30 call for decomposing, dissociating or reacting the hydrogen with another element to generate protons either to pump

hydrogen into or outside of the first measuremet space or to measure the current generated at the second proton conducting electrolyte 6. The accuracy of the this claim language is questioned. In either case, hydrogen is being pumped from one side of the electrolyte to the other side and apparently starts as elemental hydrogen and ends up as elemental hydrogen. So, how is it that hydrogen is decomposed or dissociated? Particularly puzzling is the wording reciting the reaction of hydrogen with another element to generate protons. What element and what reaction would that be?

Claims 18 and 19, line 4 of each, "the first measurement chamber" does not have antecedent basis, since line 2 of each claim calls for "a first measurement space".

Apparatus claims 1-16 are considered to distinguish over the prior art of record because none of the prior art discloses or suggests a structure of two proton conducing electrolytes and two measurement spaces connected by a diffusion-controlling section. Method claims 20 and 21 also call for the structure of apparatus claims 1-16 and are similarly distinguishable over the prior art. Method claim 18 defines over the prior art because the limitations of introducing the gas to a second diffusion-controlling section and reacting CO with a hydrogen-containing substance in the gas at the second diffusion-controlling section are not disclosed or suggested by the prior art. Method claim 19 defines over the prior art because the limitations of introducing the gas to a second measurement space via a second diffusion-controlling section and reacting CO with

a hydrogen-containing substance in the second measurement space are not disclosed or suggested by the prior art.

In the specification, pages 10-11, there is confusion in the designations of the various components. For instance, why is numeral 17 a "first constant-voltage source", when numeral 15 is already that. And why is numeral 18 a "first ammeter" when numeral 16 is already that. Numeral 37 is designated as a "first electrometer". However, numeral 22 is already designated as that, and electrometers 37 and 22 do not appear to correspond. Applicant should review all the designations to be sure that they are consistent with the drawings.

Kato etal 5,879,525 discloses a proton conducting electrolyte 4g (see col. 18, line 11). Tomantschger etal 5,302,274 discloses a Nafion proton conducting electrolyte (see col. 8, line 33).

The examiner can be reached at 703-308-3329. His supervisor Nam Nguyen can be reached at 703-308-3322. Any general inquiry should be directed to the receptionist at 703-308-0661. A fax number for TC 1700 is 703-872-9310.

T. Tung

Ta Tung

Primary Examiner

Art Unit 1753